

NOTE TO PTO PERSONNEL:
THIS PATENT APPLICATION IS BEING
FILED WITH SMALL ENTITY STATUS

AUXILIARY WHEEL RIM

BACKGROUND OF THE INVENTION

1. Field of the Invention:

The present invention relates to vehicle tires and, more particularly, to an auxiliary wheel rim for use in a vehicle tire.

2. Description of the Related Art:

Conventional vehicle tires include two types, namely, the one with inner tube and the other without inner tube. A tire with an inner tube is inflatable. When the inner tube of a tire pierced by a pointed external object, it leaks, and the driver must stop the car immediately. A sudden explosion of a tire may cause a traffic accident when the car is running on a freeway. A tubeless tire or the so-called high-speed tire does not explode when pierced by a pointed external object, giving a sufficient time to let the driver drive the car to a garage for repair. However, because no significant tire pressure loss is shown when one tire of the car was pierced by a pointed external object, the driver may keep driving the car on a highway or freeway. In this case, an accident may occur.

Therefore, it is desirable to provide an auxiliary wheel rim for a vehicle wheel that eliminates the aforesaid problems.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the

circumstances in view. It is the main object of the present invention to provide an auxiliary wheel rim, which allows the car driver to keep driving the car safety for a certain period of time upon an explosion of the tire. It is another object of the present invention to

5 provide an auxiliary wheel rim, which is easy to install. It is still another object of the present invention to provide an auxiliary wheel rim, which fits tires of different sizes.

To achieve these and other objects of the present invention, the auxiliary wheel rim comprises a plurality of first rim elements,

10 the first rim elements each comprising a top wall fitting the curvature of the wheel rim of a vehicle wheel, a smoothly arched bottom wall reinforced with at least one reinforcing rib, a middle support connected between the top wall and bottom wall of the respective first rim element on the middle, and two end supports

15 connected between the top wall and bottom wall of the respective first rim element at two distal ends, the end supports of the first rim element each having two outwardly protruding lugs; a second rim element, the second rim element comprising a top wall fitting the curvature of the wheel rim of a vehicle tire, a smoothly arched

20 bottom wall reinforced with at least one reinforcing rib, a middle support connected between the top wall and bottom wall of the second rim element on the middle, a first end support connected between the top wall and bottom wall of the second rim element at

one end, a second end support connected between the top wall and bottom wall of the second rim element at an opposite end, the first end support of the second rim element having two outwardly protruding lugs, the second end support of the second rim element

5 having a countersunk screw hole and a tool hole; a third rim element, the third rim element comprising a top wall fitting the curvature of the wheel rim of a vehicle tire, a smoothly arched bottom wall reinforced with at least one reinforcing rib, a middle support connected between the top wall and bottom wall of the

10 third rim element on the middle, a first end support connected between the top wall and bottom wall of the third rim element at one end, a second end support connected between the top wall and bottom wall of the third rim element at an opposite end, the first end support of the third rim element having two outwardly

15 protruding lugs, the second end support of the third rim element having a countersunk screw hole and a tool hole respectively disposed corresponding to the countersunk screw hole and tool hole of the second rim element, and two flanges disposed at two opposite lateral sides and adapted to support the second end

20 support of the second rim element on the second end support of the third rim element; a plurality of links respectively fastened to the lugs of the first rim elements and the lugs of the second rim element and the lugs of the third rim element with pins to connect

the first rim elements in series between the second rim element and the third rim element; and a screw bolt fastened to the countersunk screw hole of the second end support of the second rim element and the countersunk screw hole of the second end support of the third

5 rim element to secure the second end support of the second rim element to the second end support of the third rim element.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view showing an auxiliary wheel rim installed in a vehicle inside the tire.

10 FIG. 2 is an exploded view of a part of an auxiliary wheel rim according to the present invention.

FIG. 3 is another sectional view of the vehicle wheel shown in FIG. 1.

15 FIG. 4 is a schematic drawing showing the connection between the second end support of the second rim element and the second end support of the third rim element during installation of the present invention.

20 FIG. 5 is a schematic drawing showing the supporting status of the exploded tire on the auxiliary wheel rim according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, an auxiliary wheel rim 2000 is shown comprised of a plurality of first rim elements 10, a second rim

element 50, a third rim element 60, a screw bolt 72, a plurality of links 70, and a plurality of pins 71. The screw bolt 72 has a polygonal shoulder 72a.

Each first rim element 10 comprises a top wall 101 fitting
5 the curvature of the wheel rim 1000, a smoothly arched bottom wall 30, a middle support 20 connected between the top wall 101 and the bottom wall 30 on the middle, and two end supports 40 connected between the top wall 101 and the bottom wall 30 at two distal ends.

The bottom wall 30 has a reinforcing rib 301 extended along the
10 length and formed integral with the middle support 20 and the end supports 40. The end supports 40 each have two outwardly protruding lugs 40a.

The second rim element 50 comprises a top wall 101 fitting the curvature of the wheel rim 1000, a smoothly arched bottom wall
15 30, a middle support 20 connected between the top wall 101 and the bottom wall 30 on the middle, a first end support 40 connected between the top wall 101 and the bottom wall 30 at one end, a second end support 401 connected between the top wall 101 and the bottom wall 30 at the other end. The bottom wall 30 has a
20 reinforcing rib 301 extended along the length and formed integral with the middle support 20 and the first end support 40, and the second end support 401. The first end support 40 has two outwardly protruding lugs 40a. The second end support 401 has a countersunk

screw hole 402 and a through hole 403.

The third rim element 60 comprises a top wall 101 fitting the curvature of the wheel rim 1000, a smoothly arched bottom wall 30, a middle support 20 connected between the top wall 101 and the bottom wall 30 on the middle, a first end support 40 connected between the top wall 101 and the bottom wall 30 at one end, a second end support 404 connected between the top wall 101 and the bottom wall 30 at the other end. The bottom wall 30 has a reinforcing rib 301 extended along the length and formed integral 5 with the middle support 20 and the first end support 40, and the second end support 404. The first end support 40 has two outwardly protruding lugs 40a. The second end support 404 has a countersunk screw hole 405, a through hole 406, and two flanges 407 disposed at two opposite lateral sides. Further, in order to diminish material 10 consumption and the weight, the top walls 101 of the first rim elements 10, second rim element 50 and third rim element 60 are made having through holes. Additional reinforcing ribs may be made on the bottom walls 30 of the first rim elements 10, second rim element 50 and third rim element 60 to reinforce the structural 15 strength.

Referring also to FIGS. 3~5, the links 70 are respectively fastened to the lugs 40a by the pins 71 to connect the first rim elements 10, the second rim element 50 and the third rim element

60 in series, and then the second end support **401** of the second rim element **50** and the second end support **404** of the third rim element **60** are attached together, forming with the first rim elements **10** the desired annular auxiliary wheel rim **2000**. The auxiliary wheel rim **2000** thus obtained is then inserted into the inside of a tire **1100**, and then the tire **1100** with the auxiliary wheel rim **2000** are attached to the wheel rim **1000**. During installation, one side of the tire **1100** is covered on the wheel rim **1000**, and then insert two magnets **500** into the through holes **403** and **406** of the second end supports **401** and **404** to secure the second end supports **401** and **404** together, and then fasten the screw bolt **72** to the countersunk screw holes **402** and **405** to firmly secure the two second end supports **401** and **404** together, keeping the second end support **401** of the second rim element **50** stopped between the flanges **407** of the second end support **404** of the third rim element **60**. After removal of the magnets **500**, the other side of the tire **1100** is covered on the wheel rim **1000**, finishing the installation.

If the tire leaks during running, the auxiliary wheel rim **2000** supports the wheel in functioning, enabling the driver to drive the car to a repair shop safely for further repair.

A prototype of auxiliary wheel rim has been constructed with the features of FIGS. 1~5. The auxiliary wheel rim functions smoothly to provide all of the features discussed earlier.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the

5 invention is not to be limited except as by the appended claims.